

Organic agriculture

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Organic agriculture

- The term ‘organic’ is used as a synonym of ‘biological’ or ‘ecological’ farming according to EC 2092/91 regulation
 - Ecological: German & Nordic languages
 - Biological: French, Greek, Italian, Spanish, Portuguese etc.
 - Organic: English

Organic production

- Organic production is meant to “respond to site specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity”.

Organic production

- **“One can not solve a problem with the same kind of thinking that created”**
Albert Einstein
- **Rejection of an inappropriate technology.**

Organic agriculture

- Is defined in many ways. Definitions may include
 - the aim, e.g. to balance..
 - what is allowed as key practices, eg. rotation.
 - the definition may be limited to what it is not, eg. GMO free

Defining organic agriculture

“.. is holistic production management system which promotes and enhances agroecosystem health, including biodiversity, biological cycles and soil biological activity.

It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems.”

» Codex Alimentarius

Defining organic agriculture

- “Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives.

To the maximum extent feasible organic farming systems rely on crop rotations, crop residues, animal manures, legumes, green manures, on-farm organic wastes, and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients and to control insects, weeds and other pests” (USDA)

Defining organic agriculture

- ... Is an alternative farming system depending largely on locally available resources trying to re-maintain ecological balance, minimizing the negative impact of agriculture on the environment and improving the socio-economic balance of the farm.

System approach

- “The organic agriculture is an organizational principle.

The main approach is to manage a mixed farm as much as possible like an organism within a closed system.

Since site conditions are individual properties by definition, a farm organism can be conceived as an individual entity.

Organic farming depends more on specific site conditions and is therefore forced to combine the best adapted elements to a holistic approach.

Comparisons

- The aspects criticised in conventional farming systems as the
 - disturbance of the soil structure, environment and traditional landscape,
 - high-energy consumption,
 - long distance nutrient transfers and
 - intensive and unhealthy environments for the animalsare of major concern in organic production

Non-use of chemicals?

- All living or dead material is composed of chemical compounds
- Chemicals (but naturally derived) are used in organic farming for plant nutrition and protection or in animal husbandry)
- Choosing the least environmentally disruptive
 - e.g.. limitations are present
 - for plant extracts as azadirachtin or nicotinic acid or
 - for natural products as peat, copper

Using organic inputs rather than synthetic inputs

- Using excess or inappropriate timing may cause similar problems so limiting the definition of organic farming only to the use of inputs is not correct
- Although organic fertilizers are used there is a restriction related to the amount of N to be used per hectare (170 kg N/ha) or for application of natural potassium or dolomite deficiency must be proven by analysis

Organic farming is the way our ancestors used to do!

- Mixed farming practices or some techniques may resemble of that era but today they are screened under the present scientific and technical knowledge
 - e.g.. GIS, marker assisted selection etc.

GMO free status

- **Not enough evidence for safety, precautionary principle**
 - e.g.. DDT was presented as a complete solution to all pest problems but proved to be one of the most hazardous chemicals!

Organic agriculture requires long-term planning (transition period, rotation programs etc.) based on knowledge and targets at achieving an environmentally and socially sound and economically viable production

Organic agriculture

- **Organic practices can not ensure that products are free from any residues**
 - **Environmental pollution**
 - Can create pollution in the end product.
- **To prove that the end-product is free of any pollutants by laboratory analysis does not mean that the product is organic.**
- **Inspection and certification of the whole chain is an essential part of organic production.**

Organic agriculture

- Organic practices ensure that the production chain is free from any input or practice that is not allowed in the regulations.
- Organic production emphasizes product and environmental quality together with yield.
- Methods are used to minimize air, soil and water pollution.

Organic agriculture

- Uses precise and specific standards of production which aim at achieving optimal agroecosystems which are
 - socially,
 - ecologically and
 - economically sustainable.

Limitations of organic agriculture

- Nitrogen sources are limited thus nitrogen deficiencies can be a limiting factor.
- If organic fields do not managed well agricultural productivity may decline.
- Limitations due to weed and pest problems that it is difficult to control.
- May require more manual labour and cost of production may increase.
- In certain climatic conditions, on-farm resources may be limited.
- If relies on off-farm resources then cost is higher.
- Crop rotation is the basic tool to maintain soil fertility but may require longer rotation periods.
- Crop rotation may require diverse experience and hinder market opportunities.

Limitations of organic agriculture

- Requires more applied research work at local level for technical solutions.
- Site specific solutions require rapid generation and transfer of knowledge.
- Inspection and certification process has a cost.
- Small resource poor farmers have difficulty in paying certification costs unless they are subsidized.
- Local inspection bodies are very rare in developing countries.
- Farmers need support during the conversion period.
- Subsidies are very rare in developing countries.

Web sites

- <http://europa.eu.int/>
- <http://www.fao.org/organicag/>
- <http://www.ifoam.org/>